

LensHooke®

# Semen Quality Analyzer

Company Profile

World's First Fully Automatic Device



[www.lenshooke.com](http://www.lenshooke.com)



bonraybio®  
Technology Inside



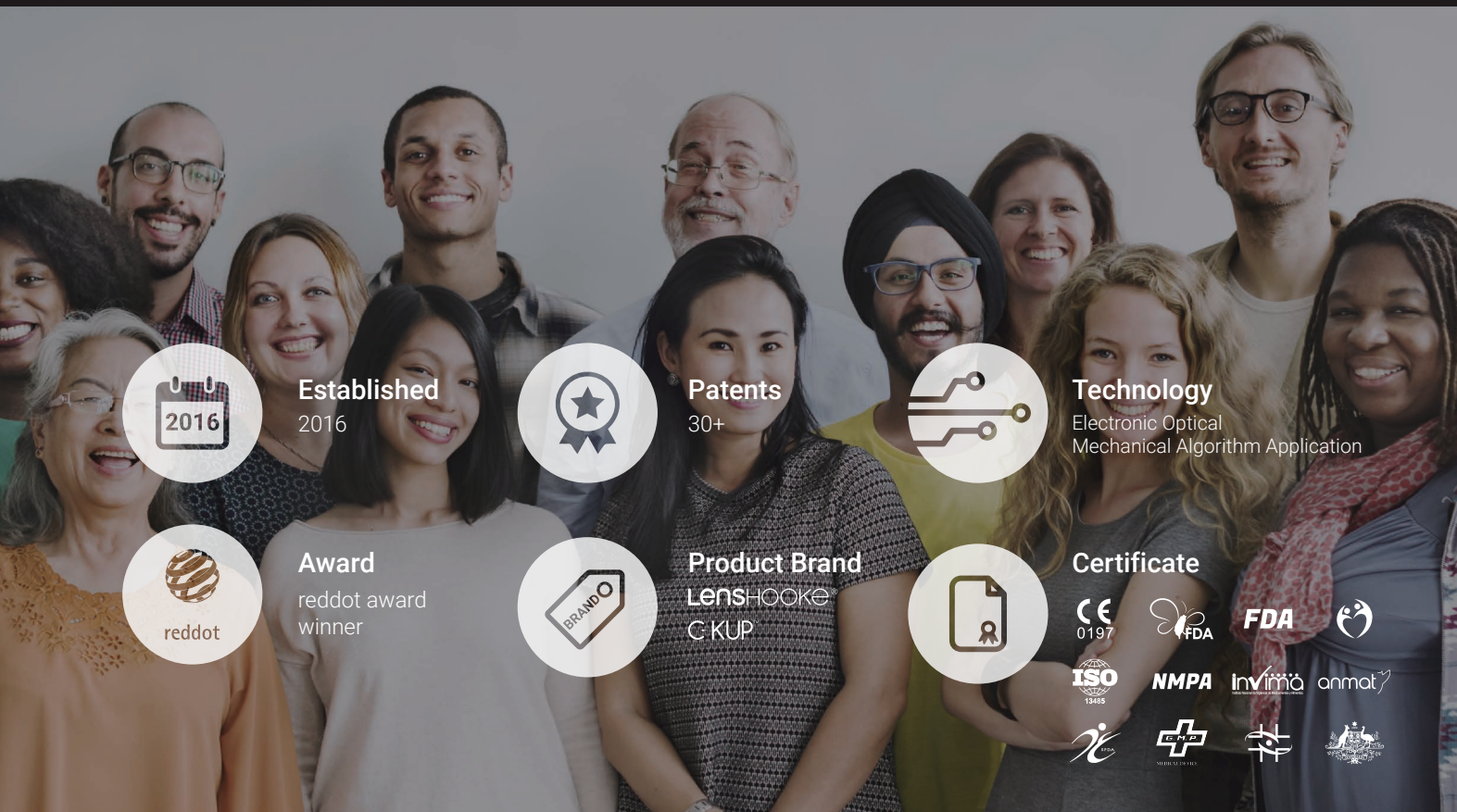
Bonraybio Corporation

# Who we are and What we do

Bonraybio® is an established team of skilled engineers & scientists with extensive experience in in vitro diagnostic industry. The company is dedicated to the research, development and commercialization of high-precision, user-friendly in vitro diagnostic devices to improve human healthcare. By leveraging our optical technology development expertise and extensive intellectual property, we aim to become a global leader in disposable microscopic diagnostic testing .

The rise in aging populations and increase in infertility rates have led to an increasing number of social and economic problems in recent years. As population is used as a basic index to gauge a country's competitive strength, how to increase the fertility rate of a population has become an important issue and priority for policy-makers around the globe.

However, despite the declining trend in populations due to an increase in infertility rates the medical device industry has very few products focusing on semen testing to help alleviate the infertility problem. To fulfill such unmet medical needs, Bonraybio has developed a fully automated and user-friendly microscopic semen quality analyzer ( **LENSHOOKE®** ) that can easily determine all of the critical semen quality parameters such as pH, sperm concentration, motility and morphology. We believe our LensHooke semen quality analyzer will benefit physicians in identifying and treating the infertility problems of their patients.



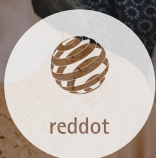
**Established**  
2016



**Patents**  
30+



**Technology**  
Electronic Optical  
Mechanical Algorithm Application



**Award**  
reddot award  
winner



**Product Brand**  
LensHOOKE®  
C KUP



**Certificate**  
CE 0197  
ISO 13485  
FDA  
NMPA  
Invima  
anmat  
Other regulatory logos



Causes of infertility

# Why semen analysis



## Increased Populations in

### Elders

By 2020, people with an age of 60 and older will outnumber children younger than 5 years old.

### Infertile couples

48.5 million couples are unable to have a child.

### Couples unable to have a second child

10.5% of women are unable to have a 2nd baby after 5 years of trying.

### Infertile male

50% infertility caused by semen quality problems in male.

## Decrease in sperm count per year of aging.



More than 90% of male infertility cases are due to low sperm counts, poor sperm quality, or both.

Source World Health Organization and European Association of Urology.



## Who needs to do the semen quality analysis?

According the report of the European Association of Urology, around 50% infertility caused by semen quality problems in male.

Therefore, monitoring of sperm status in males has become an important priority.

In additional to males infertility issues, males who have undergone vasectomies, plan to impregnate, store sperm, donate sperm or have androgenic problems, all need to do the semen analysis.



Infertility



Vasectomy



Sperm Storage



Get in pregnate



Sperm Donation



Androgenic Problem



# Compact & Automatic Semen Quality Analyzer

**PATENTED**  
NO.: US 9,959,621 B2

By leveraging our optical technology development expertise and extensive intellectual property, Bonraybio® has developed a fully automated and user-friendly microscopic semen quality analyzer (LensHooke®) that can easily determine all of the critical semen quality parameters such as pH, sperm concentration, motility, and morphology. We believe our LensHooke® semen quality analyzer will benefit physicians in identifying and treating the infertility problems of their patients.



## Auto Focus & Full HD

X1 PRO is capable of taking 1080P Full HD dynamic images to enable immediate sperm morphology examination by medical personnel.



## LAN Connection

X1 PRO LAN solutions can allow other computers, laptops, and iPads to connect with the analyzer to preview or download the files and videos.



## Diversified Report Format

X1 PRO provides PDF, video reports, and CSV format data reporting to allow for easier system transfer.



## Customized PDF Report

X1 PRO offers 4 key data for diagnosis in data format (MSC, PMSC, VAP, VSL, VCL, LIN, STR, WOB, ALH, and BCF), and allows users to choose their own logo/title and add it to the PDF report.



## Barcode Scanning

X1 PRO is able to connect with the barcode scanner by USB port to scan the patient / sample's ID or product lot number.



## Quality Control

By using with X QC Beads, X QC Reticle and X QC Video, X1 PRO can do the Quality Control Test in 3 different concentration levels.



## Operation Steps

# Only 3 steps, and 2~5 minutes to get all of test results!



01

Apply the Specimen



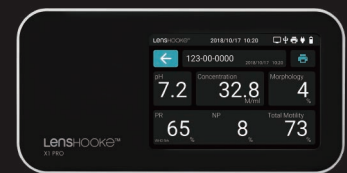
02

Insert the Test Cassette



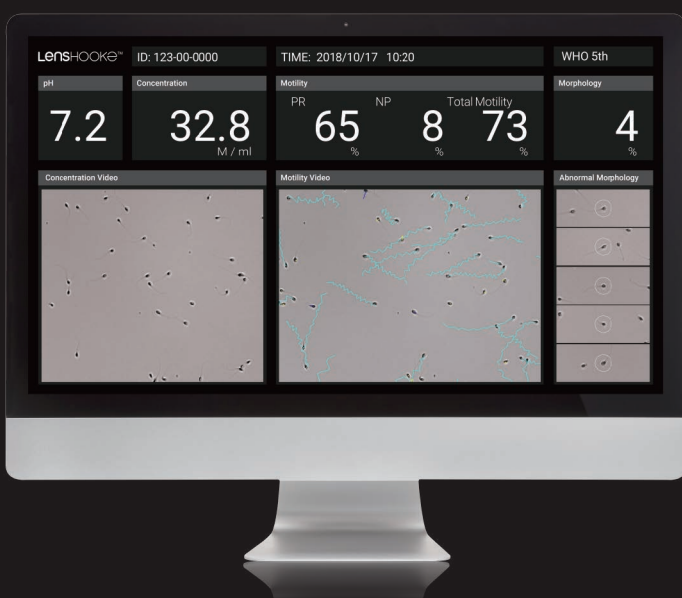
03

Read the result



## 4 Key Dta for Diagnosis

LensHooke® X1 PRO is capable of taking 1080P Full HD dynamic images to enable immediate sperm morphology examination by medical personnel.



pH value



Concentration



Morphology



Motility (NP, PR, Total Motility)



Validation Report

# Manual Method V.S LensHooke® Semen Quality Analyzer

Concentration, total motility and progressive motility measured using LensHooke® X1 PRO Semen Quality Analyzer had a very high correlation ( $p > 0.9$ ) with Manual Semen Analysis.



### Concentration

Correlation analysis  
(Pearson's correlation coefficient)



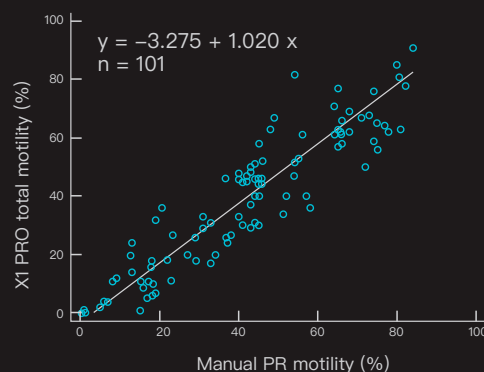
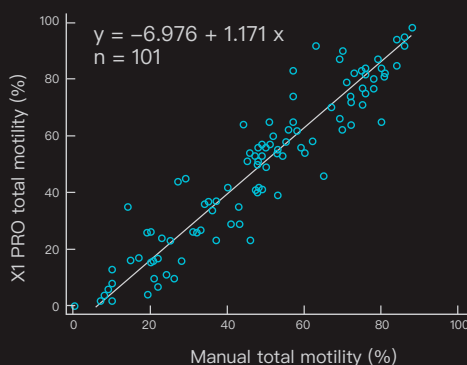
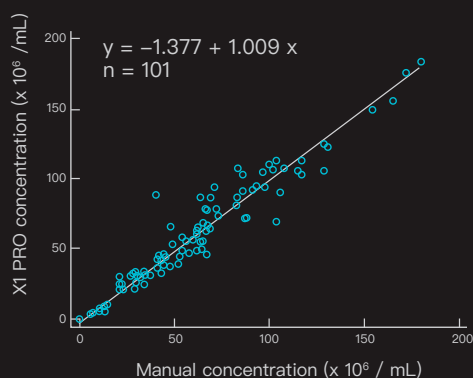
### Motility (TM, Total Motility)

Correlation analysis  
(Pearson's correlation coefficient)



### Motility (PR, Progressive Motility)

Correlation analysis  
(Pearson's correlation coefficient)



- Concentration & total motility showed correlation of inter-observer agreement ( $> 0.9$ ) & CV% of intra-observer agreement ( $< 10\%$ ) for LensHooke® Semen Quality Analyzer.

Parameters	Correlation coefficient for the inter-observer agreement		Coefficient of variance (CV%) for the intra-observer agreement	
	Concentration	Motility	Concentration	Motility
Manual	0.9351	0.9181	8.63%	4.71%
LensHooke®	0.9485	0.9118	7.85%	9.89%

Source Glickman Urological Institute, Cleveland Clinic, Cleveland, Ohio, USA

# Semen Test Cassette



Easy to Open



Reduce the Manual Error



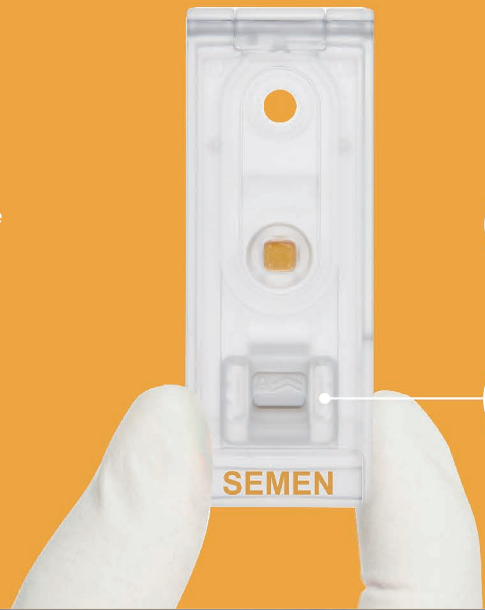
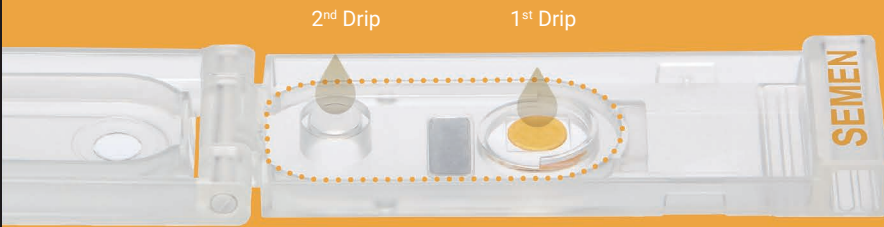
Anti Leakage



Insertion Guide



Optical Grade Material



3 different levels of control

# Quality Control

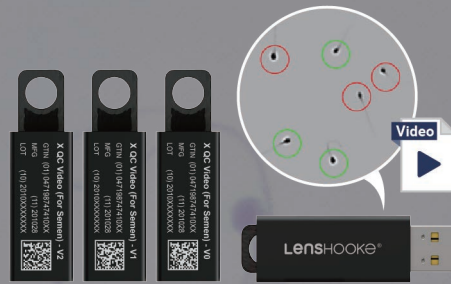


By using with LensHooke® X QC Beads, X QC Reticle, and X QC Video, LensHooke® X1 PRO can do the Quality Control Test for all of the parameter.

X QC Reticle **Reusable**

X QC Video **Reusable**

X QC Beads



Concentration



Motility



Morphology



Concentration



pH value

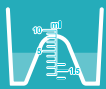
Innovative design

# Liquefaction Test Cup

C-KUP™



Wide Opening



Volume Check



Liquefaction Check



Pipette Free



World's first cup to **Collect & Check** the sample.



LensHOOKE®